

REMARKS

The Office Action of September 8, 2004 has been carefully studied. The allowability of claim 4 is noted, and said claim is substantially incorporated in new independent claim 22 except that it does not require the structure of claim 2.

The following paragraphs correspond to the order of the paragraphs of the Office Action.

Drawings

Attached are replacement sheets concerning Figures 1, 5A and 6, all of which correspond to the prior art, as pointed out in the specification and which are now designated as such on the figures. In addition, the specification is amended on page 9 by describing element (55) which is a one stage tray. Also, on page 8 of the specification, the reference number (5) is introduced so as to identify the material shown in the drawing is Sulzer type packing. These changes do not constitute new matter inasmuch as they merely set forth what is clear from the specification, drawings and claims.

Claim Objections

The Examiner is thanked for noting the misspelling in claim 18 which is now corrected. As for claims 19, 21 and 22, it is seen that they are amended so that they are no longer merely indications of intended uses.

It is also seen that claim 1 is amended by removing in line 2, the expression "at least a portion of which is hydrogen" inasmuch as the nature of the gas is not intended to limit the scope of claim 1.

Claim Rejections - 35 U.S.C. 103

Reconsideration is courteously requested of the rejection of claims 1-3, 5 and 14-17 as being unpatentable over Jensen (4,140,625) in view of Hearn et al. (5,523,062):

Jensen 4,140,625

In the Office Action, it is stated correctly that Jensen does not teach the use of a packing within the downcomers or the nature of the packing. Thus, this primary reference, in not teaching the incorporation of packing within the downcomers, does not even touch on the concept of Applicants' invention. Instead, for the purposes of achieving a wide spread distribution of material, Jensen utilizes "splash blocks" below the downcomers. Accordingly, in view of the major deficiency of Jensen, it is necessary to attempt to combine this reference with another.

Hearn et al. 5,523,062

By inspection, it is seen that the Hearn et al. invention is directed to a distribution element spaced within a packed distillation column so as to improve separation characteristics. The only mention of downcomers is found on column 1, lines 65-67 where the corrugated trays of U.S. 2,767,967 were tried as replacement trays in columns for trays with downcomers. (Emphasis added).

In a contrary manner, in Applicants' invention, the utilization of packing in the downcomer is used to achieve mixing rather than separation. Consequently, it is respectfully submitted that there would be no motivation whatsoever to combine any of the teachings of Hearn et al. with the teachings of Jensen et al., to arrive at Applicants' invention. At best, the distribution element of Hearn et al. could be used within a catalyst bed of Hearn et al. for purposes of redistributing the gas and liquid flow evenly across the entire bed in the column. Thus, it is respectfully submitted that even if it meant one of ordinary skill in the art were to be inclined to use the distribution element of Hearn et al., it would be incorporated in the catalyst bed of Jensen, there being no motivation to incorporate it in the downcomers. Accordingly, it is courteously submitted that the Examiner has sufficient technical and legal grounds for withdrawing the rejection.


Goebel et al. 5,523,062

This reference was used in combination with Jensen et al. and Hearn et al. for the rejection of claims 18-22. Inasmuch as Goebel et al. does not in any way provide motivation for the combined teachings of Hearn et al. and Jensen et al. to arrive at Applicants' claim 1, it is clear that dependent claims 18-22 are also unobvious and patentable under 35 U.S.C. 103. As for the specific teachings of Goebel et al., Applicants will refrain from discussing same at this time, reserving the right to comment at a later date if ever necessary. Suffice it to note that Applicants do not necessarily agree with any of the comments regarding Goebel et al.

In view of the above remarks, favorable reconsideration is courteously requested. If there are any remaining issues which can be expeditiously resolved by a telephone conference, the Examiner is courteously invited to telephone Counsel at the number indicated below. In Counsel's absence during the period of February 1, 2005 through March 14, 2005, the Examiner may wish to telephone Counsel's secretary, Mrs. Richardson at 703-812-5326, and she will provide an attorney who can address the Examiner's concerns.

The Commissioner is hereby authorized to charge any fees associated with this response or credit any overpayment to Deposit Account No. 13-3402.

Respectfully submitted,


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Attorney Docket No.: PET-1928
Date: January 10, 2005
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